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SN 10/646,378
Docket No. S-94,729
In Response to Office Action dated April 6, 2006

REMARKS

Applicants appreciate the courtesy shown by the Office, as evidenced by the Final Office Action mailed on April 6, 2006, and the June 6 and June 13, 2006, telephone interviews between Applicants' counsel and Examiner Helen Pezzuto. In the April 6 Office Action, the Examiner rejected Claims 1-43. As such, Claims 1-43 remain in the case with none of the claims being allowed.

The April 6 Office Action and June 6 and June 13 telephone interviews have been carefully considered. After such consideration, Claims 1-4, 13, 17-19, 22, 24-26, 33, 35, 36, and 42 have been amended and a Request for Continuing Examination (RCE) is submitted herewith. Applicants respectfully request reconsideration of the application in light of the accompanying amendment and remarks presented herein, both of which reflect the content of the June 6 and June 13 telephone interviews.

Rejection under 35 U.S.C. §112, second paragraph

Claims 24-25, and 42 are rejected under 35 U.S.C. §112, second paragraph, as being indefinite. The Examiner states that the recitation of arsenic and antimony along with the various metallic species in Claim 25 is inconsistent with the ordinary meaning of "non-metallic" species, and has requested clarification.

Applicants submit that Claims 24, 25, and 42 have each been amended to correctly identify elements such as boron, arsenic, and antimony as metalloids. The metallic species have also been deleted from Claim 25. In addition, claims 1, 18, 26, 33, and 36 have each been amended to provide proper antecedent basis and correctly identify elements such as boron, arsenic, and antimony as metalloids.

Accordingly, Applicants submit that, by so amending the claims, the rejection under 35 U.S.C. §112, second paragraph, is successfully overcome.

Rejections under 35 U.S.C. §103(a)

Claims 1-43 are rejected under 35 U.S.C. §103(a) as being unpatentable over Smith et al. (U.S. Patents 5,643,456 (Smith '456), 5,766,478 (Smith '478), and 5,891,956 (Smith '956)) in view of GB 2 360 525 (with respect to Claims 3-8, 27-30, and 37) or GB 2 360 525 A.

Applicants submit that independent Claims 1, 26, and 36 have each been amended to recite the limitation that the functionalized polymer binds to a neutral metalloid or non-metallic solute or a suite of metalloid or non-metallic solutes by one of inclusion and ester or thioester

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formation. Support for the amendment is found, for example, on page 11, lines 5-19, and Examples 5-10 in the specification.

Applicants submit that, in order to establish a *prima facie* case of obviousness, the combination of references cited must either teach or suggest all of the claimed limitations. Accordingly, Applicants submit that neither Smith '456, Smith '478, nor Smith '956 teaches or suggests that the functionalized polymer binds to a neutral metalloid or non-metallic solute by either inclusion or ester or thioester formation. These references instead teach that the functionalized polymer binds to metal ions by complexation rather than by ester formation or inclusion. See, for example, Smith '956, column 9, lines 9-15; Smith '456, Abstract, column 2, lines 33-5, and column 7, lines 22-25; and Smith '478, abstract and column 4, lines 64-67. Applicants submit that neither GB 2 360 525 nor GB 2 360 525 A teach or suggest these limitations as well.

Applicants therefore submit that, because the combination of references neither teaches nor suggests all of the limitations of amended independent Claims 1, 26, and 36, the rejection of these claims and the claims dependent thereon under 35 U.S.C. §103(a) as being unpatentable over Smith '456, Smith '478, and Smith '956 further in view of GB 2 360 525 or GB 2 360 525 A is successfully overcome.

Claims 1-2, 9-26, 31-36, and 38-43 are rejected under 35 U.S.C. §103(a) as being unpatentable over Howland et al. (U.S. Patent 5,726,267).

Applicants submit that Howland et al. neither teach nor suggest that the functionalized polymer binds to a neutral metalloid or non-metallic solute – i.e., a substance dissolved in a solvent (liquid). Instead, the reference, in column 5, lines 22-35, teaches mixing ceramic powders with an aqueous solution to form a slurry, which is a suspension of solid, undissolved particles in a liquid, to act as a binder that holds the solid together, and provides no suggestion of bonding neutral metalloid and non-metalloid species that are dissolved.

Applicants therefore submit that, because the reference neither teaches nor suggests that functionalized polymer bind to a neutral metalloid or non-metallic solute, the rejection of amended independent Claims 1, 26, and 36 and the claims dependent thereon under 35 U.S.C. §103(a) as being unpatentable over Howland et al. is successfully overcome.

Claims 1-43 are rejected under 35 U.S.C. §103(a) as being unpatentable over Kawamura et al. (Ind. Eng. Chem. Res. 1993, 32, 286-391).

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Applicants submit that Kawamura et al. do not teach or suggest that the functionalized polymer binds to a neutral metalloid or non-metallic solute by either inclusion or ester or thioester formation. The reference, as noted by the Examiner, teaches the separation of ions such as As(III), B(III), and Si(IV), rather than neutral molecules, using polyaminated chitosan resin as potential separators in wastewater treatment application.

Because Kawamura et al. neither teach nor suggest all of the limitations of amended independent Claims 1, 26, and 36, Applicants submit that the rejection of these claims and the claims dependent thereon under 35 U.S.C. §103(a) as being unpatentable over the reference is successfully overcome.

In addition to the amendments described above, amendments have been made to Claims 1, 4, 17, 22, 28, and 33 to correct typographical errors and misspellings. Claims 3 and 33 have been amended to change dependencies. Claims 1, 13, 19, 26, 35, and 36 have each been amended, as suggested by the Examiner in the above-referenced telephone interviews, to make the scope of the claims more consistent with the scope of the disclosure and examples.

In light of the amendments and remarks presented herein, Applicants submit that the case is in condition for immediate allowance and respectfully request such action. If, however, any outstanding issues remain unresolved, the Examiner is invited to telephone the Applicants' counsel at the number provided below.

Respectfully submitted,

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